



# The Role of Patents in Semiconductors

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## Insights from Two Recent Studies

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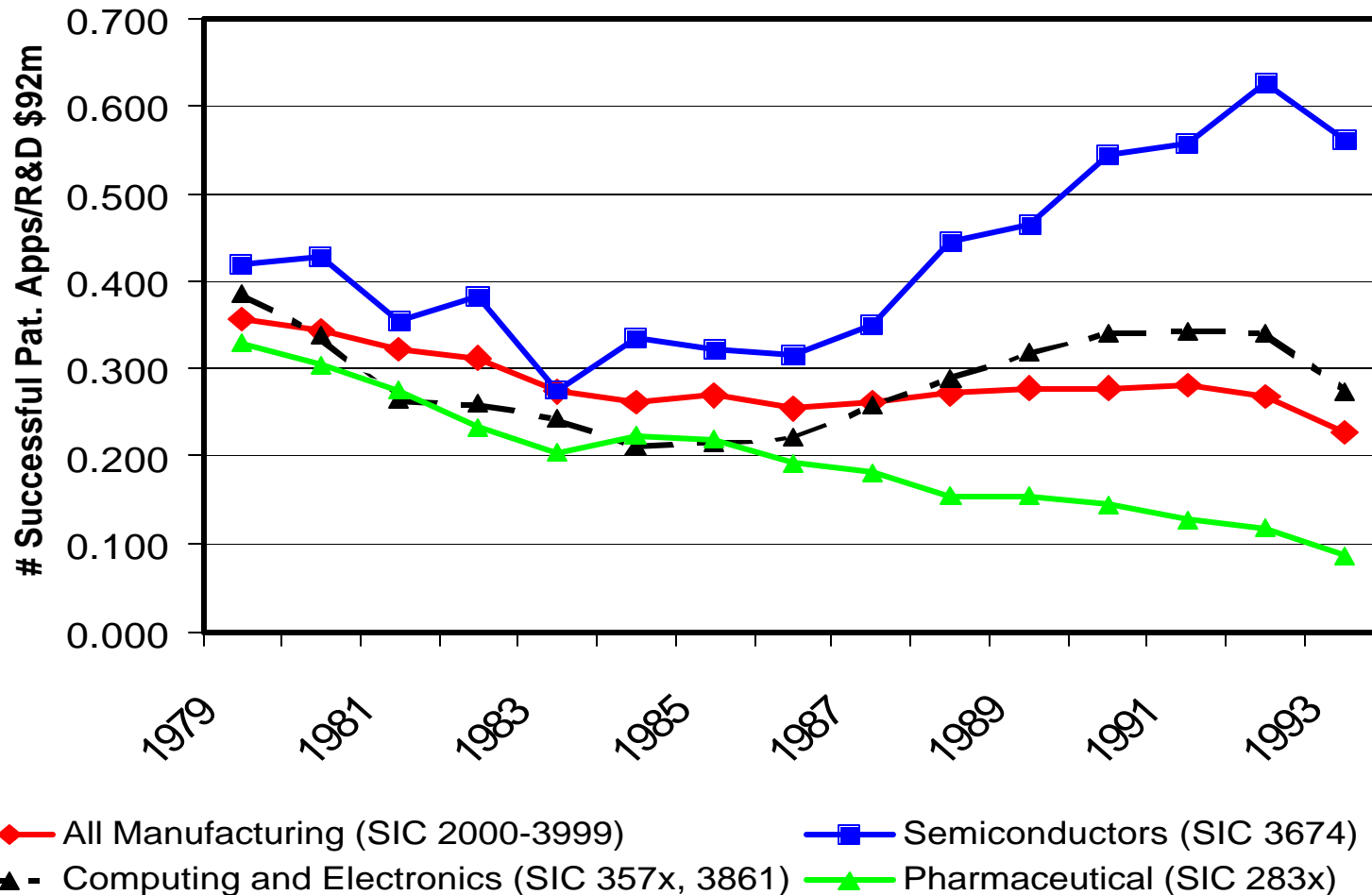


# Semiconductors

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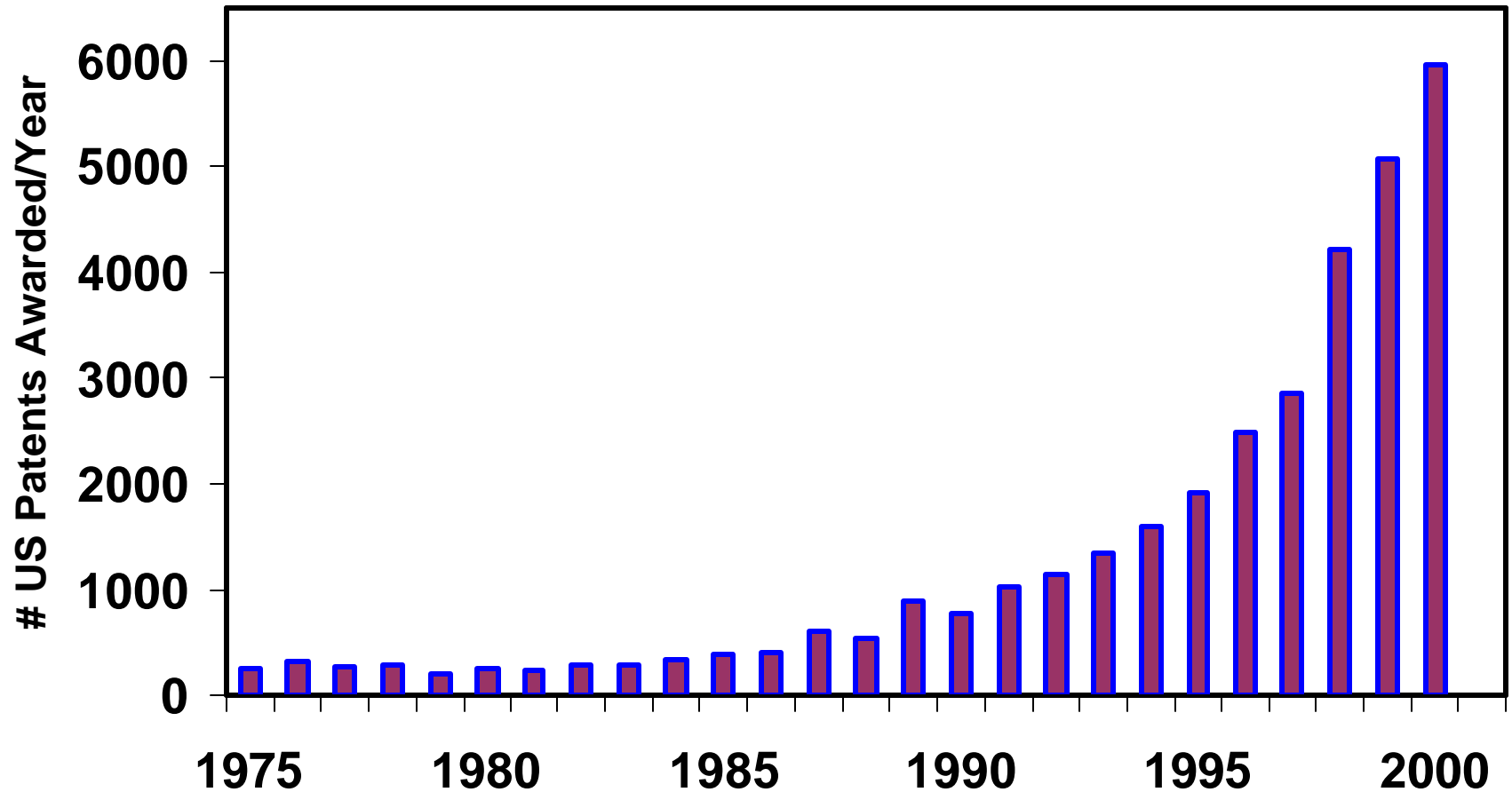
- Among the industries *least* reliant on patents to appropriate returns to R&D (Yale, CMS surveys)
  - Pivotal role of lead time, secrecy, and complementary manufacturing capabilities
- Yet, a dramatic growth in patenting by semiconductor firms—that outpaces trends in other industries

# Patenting v. R&D Spending, 1979-1993: Semiconductors v. Other US Manufacturing



Source: Hall and Ziedonis (2001)

# A Steep Upward Trend: US Patents Awarded to US Semiconductor Firms, 1975-2000





# What's driving the surge?

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- Hall and Ziedonis (2001):
  - Improved management of R&D process?
  - Technological opportunities?
  - Broader changes in the US patent landscape
    - 1980s “pro-patent” legal shift
      - Demonstration events in mid-1980s
        - Polaroid/Kodak case
        - TI’s victories and lucrative IP strategies
    - Ease of obtaining patents at USPTO
  - But different strategic responses within the industry



# Implications for Dedicated Semiconductor Manufacturers

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- Safeguard assets
  - “exclude before you’re excluded”
- Accumulate more “bargaining chips”
- Improve internal management of patenting process
  - Patent Advocacy committees
  - “Harvest” more latent inventions
  - Annual goals, awards



# Implications for Specialized Design Firms

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- Secure “bullet proof” patents
  - Raise venture capital
  - Stake out proprietary rights in niche markets
- Plan towards an aggressive enforcement strategy
  - Design firms, on average, enforce 4 out of every 100 patents they own
- Patent defensively as revenues grow



# Summary

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- Semiconductor firms do not rely solely on patents to capture returns from their knowledge assets
- Yet few can afford not to patent
  - Manufacturers: broader, strategic value
  - Design firms: critical business assets





# Emerging Issues

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- How long will the upsurge continue?
- How can firms navigate the “thickets” of IP most effectively?
- And, is this good or bad news for the innovation process?